

**WATER QUALITY  
M E M O R A N D U M  
Utah Coal Regulatory Program**

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March 18, 2010

TO: Internal File

THRU: James D. Smith, Permit Supervisor *JS 03/18/10*

FROM: Kevin Lundmark, Environmental Scientist II *KWL*

RE: 2009 3rd Quarter Water Monitoring, Hidden Splendor Resources, Inc., Horizon Mine, C/007/0020-WQ09-3, Task ID #3384

The Horizon Mine is operational and mining coal. The water monitoring plan is outlined in Chapter 7 - Hydrology of the MRP, which was most recently updated in June 2005. Surface and groundwater monitoring is required for the Horizon Mine under the operation plan, and monitoring procedures and parameters are discussed in MRP Section 7.1.5 (groundwater) and Section 7.2.2.3 (surface water). UPDES permit UTG040019 authorizes discharges from two outfalls and expires on April 30, 2013.

This report was prepared from monitoring data queried from the UDOGM database. The data that support this report were collected and submitted to the database by the Operator. The data were downloaded into file O:\007020.HZN\Water Quality\Spreadsheets\HZN\_17Mar2010.xls for this review.

**1. Were data submitted for all of the MRP required sites?**

**Springs**      YES [X]      NO [ ]

Springs SP-1, SP-2, SP-4, SP-9 (Jewkes Spring), 2-6-W (Homestead Spring) and GV-70 will be monitored once each calendar quarter (when the springs are accessible) during the operational and reclamation phases. Ground water quality parameters to be checked are outlined in Table 7-2 of the MRP.

All required springs were monitored during third quarter 2009. No flow was reported for springs SP-1 and SP-4. Flows for the other springs ranged from 0.25 gpm at 2-6-W to 3 gpm at SP-9 (Jewkes Spring).

**Streams**      YES [X]      NO [ ]

Stations SS-3, SS-5, SS-7, SS-8, SS-10 and SS-11 will be monitored once each quarter (as access conditions permit). Surface water quality parameters are outlined in Table 7-5 of the MRP.

All required stream sites were monitored during third quarter 2009. No flow was reported for sites SS-8 and SS-11. Flows were reported for the other sites, with discharges ranging from 0.05 gpm at SS-5 to 335 gpm at SS-3.

**Wells**            **YES [X]**        **NO [ ]**

Water level data will be collected during the operational and reclamation phases from wells HZ-95-1, HZ-95-1S, HZ-95-2, HZ-95-3 and HZ-01-06-1 once each quarter, when accessible.

Well HZ-95-3 was reported as dry during third quarter 2009. Water levels were measured for the other required monitoring wells.

**UPDES**            **YES [X]**        **NO [ ]**

Monthly monitoring is required for the UPDES outfalls associated with the mine discharge (001) and sedimentation pond (002).

UPDES sites were monitored monthly for the quarter and all required data submitted.

**2. Were all required parameters reported for each site?**

**Springs**            **YES [X]**        **NO [ ]**

**Streams**            **YES [X]**        **NO [ ]**

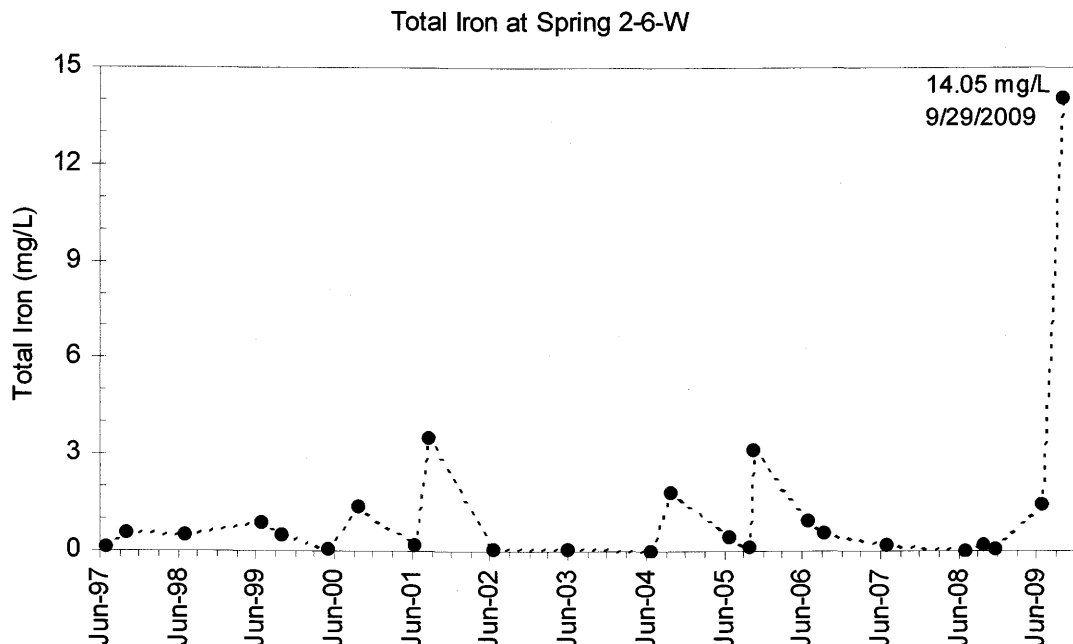
**Wells**              **YES [X]**        **NO [ ]**

**UPDES**            **YES [X]**        **NO [ ]**

**3. Were irregularities found in the data?**

**Springs**            **YES [X]**        **NO [ ]**

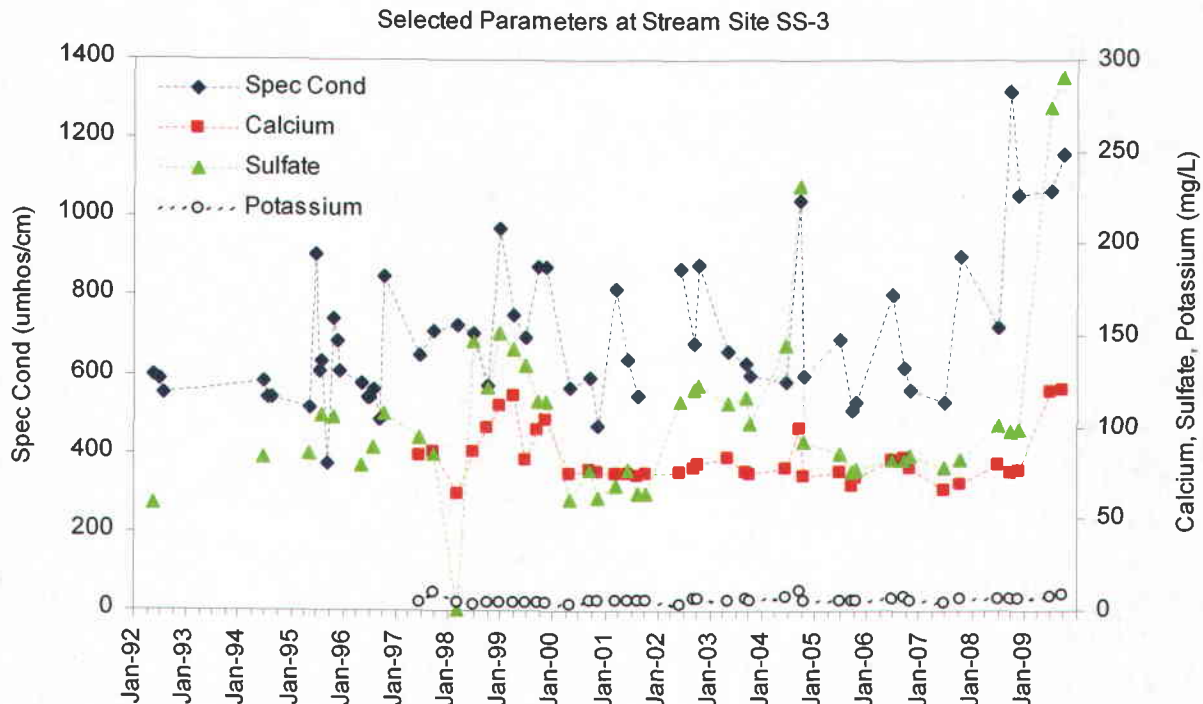
The total iron concentration reported for spring 2-6-W on 9/29/2009 was 14.05 mg/L, which exceeds the average measured concentration at this site by greater than two standard deviations. The previous maximum total iron concentration reported for this spring was 3.5 mg/L during third quarter 2001. As shown in the plot below, the total iron result for third quarter 2009 appears to be anomalously elevated.



The bicarbonate (221 mg/L) and TDS (321 mg/L) results for the spring SP-2 sample collected 9/29/2009 are below the average values for these parameters at this spring by greater than two standard deviations, and are the lowest concentrations reported to date. The previous minima for these parameters were 242 mg/L for bicarbonate and 351 mg/L for TDS, which were both associated with third quarter samples (third quarter 2006 for bicarbonate and third quarter 2008 for TDS). The cation-anion balance was acceptable for the third quarter 2009 spring SP-2 sample analysis.

**Streams**      YES ☒      NO ☐

Specific conductance, sulfate, dissolved calcium and dissolved potassium were elevated by greater than two standard deviations above average values for stream site SS-3 during third quarter 2009. The cation-anion balance was acceptable for the third quarter 2009 stream SS-3 sample analysis. Reported values for specific conductance, sulfate and dissolved calcium have been highly variable, as shown in the graph below. The time-series data suggest that specific conductance may be increasing at site SS-3.



Wells YES [ ] NO [X]

UPDES YES [ ] NO [X]

4. On what date does the MRP require a five-year resampling of baseline water data.

Re-sampling due date is third quarter, July-September 2012.

5. Based on your review, what further actions, if any, do you recommend?

None

Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? Yes [ ] No [X]

6. Follow-up from last quarter, if necessary.  
Did the Mine Operator submit all the missing and/or irregular data (datum)?

None needed.